

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
11 August 2005 (11.08.2005)

PCT

(10) International Publication Number  
**WO 2005/074030 A1**

(51) International Patent Classification<sup>7</sup>: **H01L 27/04**,  
27/088, 27/092, 29/786, G06K 19/07

(21) International Application Number:  
PCT/JP2005/001542

(22) International Filing Date: 27 January 2005 (27.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2004-024248 30 January 2004 (30.01.2004) JP

(71) Applicant (for all designated States except US): **SEMI-  
CONDUCTOR ENERGY LABORATORY CO., LTD.**  
[JP/JP]; 398, Hase, Atsugi-shi, Kanagawa, 2430036 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KOYAMA, Jun**  
[JP/JP]; c/o SEMICONDUCTOR ENERGY LABORA-  
TORY CO., LTD., 398, Hase, Atsugi-shi, Kanagawa,  
2430036 (JP).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

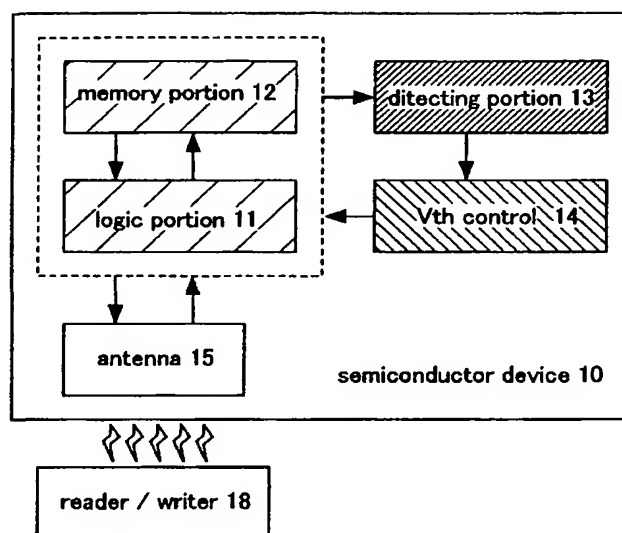
(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: SEMICONDUCTOR DEVICE



(57) Abstract: The invention provides a semiconductor device that power is stabilized by suppressing power consumption as much as possible. The semiconductor device of the invention includes a logic portion and a memory portion each including a plurality of transistors, a detecting portion for detecting one or both of operation frequencies of the logic portion and the memory portion, a Vth control for supplying a Vth control signal to one or both of the logic portion and the memory portion, and an antenna. Each of the plurality of transistors has a first gate electrode which is input with a logic signal, a second gate electrode which is input with the Vth control signal, and a semiconductor film such that the second gate electrode, the semiconductor film, and the first gate electrode are provided in this order from the bottom.

WO 2005/074030 A1